Reflections

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Year 2000: Beyond computer systems

... pages 6 and 7

A Department of Energy/University of California Laboratory

Inside this issue ...

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Reflections

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Correction ...

In the photo caption on Page 4 of the October 1999 "Reflections," Benny Montoya, a student in Subatomic Physics (P-25), was misidentified as Javier Martinez.

editor's journal

Looking to the future, reflecting on the past

I can't believe we're just weeks away from the year 2000. Sure, there's been a lot of talk during the past year about the impending 21st Century. And yes, the advertising scions certainly have hyped and commercialized the coming of the new millennium and the events to celebrate its arrival — which, by the way, doesn't really happen until 2001. Still, there's something about being weeks away from the last year in a century (or the first one in a new century if you're not being exact) that has me in awe and finds me reflecting on how far mankind has come — and how far it can go — socially, technologically and scientifically. And in reflecting, I can't help but think about my Great-aunt Clara.

My great-aunt is 113 years old, and if she lives to Jan. 1, 2001, she will have lived in three centuries, having been born July 4, 1886. While she's not as physically sound as she once was, she's still mentally alert and a marvel to the human ability to endure and grow. She's seen so many changes in her lifetime, and yet she always seems eager to see more. I remember when I was younger and thought she was really ancient (she was about 85 then), I used to love to sit with her and my other great-aunt and hear them talk about the "olden days." She took great delight in telling me how things were when she was young, and she always seemed to have a story to go with a notable technological milestone in her life. For instance, she told me how as a young woman, she ran outside without her shoes on to watch the first automobile she'd ever seen go down the road — it was several weeks before she saw another one. She also told me how excited she was when she and her late husband got electric power lines to their rural house around 1920; how proud she was when my grandmother (her little sister) became the first person on her street to get a telephone installed in her home (sometime in the late 1930s); and how she took her first train ride around age 10 and her first airplane ride at age 77.

She especially liked to talk about seeing "that man" (Neil Armstrong) walk on the moon on TV. She always talked about this historic event with a bit of disbelief in her voice. I later found out that it was years after the walk before she really believed a man had actually been on the moon. Over the years, my great-aunt spoke of countless other events, both good and bad, that I could only imagine or read about in books.

The last time I talked to her about my work, she seemed proud to know I had a job at a science laboratory. She was especially proud when I explained to her that Los Alamos was the place where the atomic bomb was developed. "You know, the bomb that was dropped on Japan and helped end World War II," I said. If she knew of the many other Los Alamos contributions to science and technology, I'm sure she'd be even prouder of my association with the Lab.

Perhaps someday I'll have the opportunity to talk about the technological and scientific changes I've observed through the years with a grandchild, great-niece or great-nephew. If I do, I'll make a special point of mentioning the wonderful science done at the Laboratory in the "olden days." I'll also make a point of directing that child to the Lab's continuing contributions to national security, human health and basic science.

So, as we head into the new year, secure in the knowledge that we at the Laboratory are as ready as possible for the Y2K changeover (see the article on pages 6 and 7), take some time, if you will, to reflect on what Los Alamos National Laboratory has meant to the 20th century and prepare for the challenges and accomplishments that lay before us in the 21st.

May the coming year and next century be filled with hope and promise.

'For they are jolly good fellows ...'

Irene Beyerlein

David Egolf

Jaqueline Kiplinger

by Kay Roybal

You've probably heard of them — Oppenheimer, Feynman and Reines fellows — but you may not know who they are, what they do and how they got here.

It all began some 25 years ago, when then-Lab Director Harold Agnew conceived of the J. Robert Oppenheimer Fellowship to attract scientific talent that might otherwise go to academia. The fellowship, and others that followed, offers recipients an opportunity to pursue independent research with the help of the Lab's considerable scientific resources.

Since the first fellowship was awarded to David Campbell, a long-time Lab staff member who now heads the physics department at the University of Illinois, JRO fellows have gone on to distinguished careers at the Laboratory and elsewhere.

Today, the Lab has seven JRO fellows: Dana Berkeland of Neutron Science and Technology (P-23), Irene Beyerlein of Structure/Property Relations (MST-8), Michael Chertkov of Complex Systems (T-13/CNLS), Csaba Csaki of Elementary Particles and Field Theory (T-8), Scott Greenfield of Advanced Chemical Diagnostics and Instrumentation (CST-1), Hui Li of Theoretical Astrophysics (T-6) and Yong-Zhong Qian of Medium Energy Physics (T-5).

The Lab's two Feynman fellows are David Egolf of Condensed Matter and Thermal Physics (MST-10) and the Center for Nonlinear Studies (CNLS) and Chris Fryer of Theoretical Astrophysics (T-6). The Reines fellow is Jaqueline Kiplinger of Chemical and Environmental Research and Development (CST-18).

All are involved with cutting-edge research and making important contributions to their field, but the following highlights three of them.

Beyerlein develops models to predict the strength and durability of composite materials. She is part of a team that recently discovered a technique for strengthening concrete, a discovery expected to have long-term implications for engineering and construction.

Beyerlein, who earned a doctorate in theoretical and applied mechanics from Cornell University, was presenting a seminar when she was invited to speak at Los Alamos by Lab fellow Terry Mitchell of the Lab's Center for Materials Science.

"I found out about the Oppenheimer fellowship during that visit," she said. "It seemed like an opportunity to have the freedom to do research in any area I wanted. For me, it was all about the freedom."

Having the chance to collaborate with scientists in other fields was another draw. "I always had pursued projects in interdisciplinary areas of mechanics, materials science and physical science," Beyerlein said, "and crossing [disciplinary] barriers at Los Alamos is common and easy."

The Richard P. Feynman Postdoctoral Fellowship, named for the Nobel laureate who worked at the Lab during the Manhattan Project and supported by the associate Laboratory director for nuclear weapons, fosters research in theory and computing with an emphasis on modeling and simulation.

Egolf studies far-from-equilibrium systems at CNLS. He received his doctorate from Duke University and arrived at the Lab at the instigation of Lab fellow Robert Ecke of Condensed Matter and Thermal Physics (MST-10).

"The Center for Nonlinear Studies and all of the different disciplines it brings together was what really excited me at the Laboratory," he said. "So many interesting, important people are always coming through for conferences or sabbaticals or just to interact with the staff."

Egolf is currently trying to come up with new ways of quantifying and understanding the complicated nonlinear phenomena that arise in systems like fluids, the weather, proteins, granular media and the human heart.

The newest fellowship is the Frederick Reines Postdoctoral Fellowship in Experimental Sciences, named after the former Lab researcher who won the 1995 Nobel Prize in Physics. The Reines Fellowship, which goes to outstanding experimentalists in all fields and is also supported by ALDNW, was awarded for the first time this year.

Kiplinger received her doctorate in organometallic fluorocarbon chemistry from the University of Utah and completed a stint as a University of California Presidential Postdoctoral Fellow at UC Berkeley.

"I was struck by the caliber of the scientists here and the quality of their research," she said. "It seemed like a nice blend of applied and basic research and a place where you can do a lot of good with your science."

Kiplinger's work will focus on developing general entries into the synthesis of potential polymer catalysts for the preparation of previously inaccessible fluoropolymers in a safe and efficient manner. She also hopes to do uranium chemistry during her fellowship and find ways to create new fluorocarbon materials.

Candidates for these specialized fellowships must have earned doctoral degrees within the last five years or have completed all degree requirements by commencement of their appointment. They must display extraordinary ability in scientific research and show clear and definite promise of becoming outstanding leaders in their field of research.

Oversight for the fellowship programs rests with the science, technology and programs directorate, but they are administered through the Human Resources Staffing group. For more information, access *http://stb.lanl.gov/postdoc/postdoc.html*.

reaching out

New Mexico teachers 'lasso' space science

by Kay Roybal

This fall, New Mexico students from Tucumcari to Farmington are learning space physics, courtesy of NASA and the Laboratory.

Elementary school students are writing myths and legends to explain the aurora borealis and comparing their own and ancient myths to the science of the phenomenon.

Mid-school students are employees of a fictitious company, Mega-Fun Inc., that's been asked to design exhibits and rides for a Disney World expansion based on exploring the solar system.

High school physics students are interpreting complex data from instruments measuring solar wind.

All the students are sharing their experiences and insights through a space science education Web site.

These groundbreaking learning experiences are being provided by nine teachers who participated in the Los Alamos Space Science Outreach program, which trains teachers to encourage students to pursue careers in space science.

Sponsored by the Center for Space Science and Exploration (CSSE) and several NASA-funded space projects, LASSO is a collaborative outreach effort of Laboratory scientists, education professionals from the Lab's Education Program Office and participating teachers.

Mountain School fifth-grade teacher Stephanie Spanier instructs students Ian Dunn and Sami Rendon in the basic principles of levers as part of a new Space Instrumentation unit. Spanier created the lesson plans last summer through the Los Alamos Space Science Outreach program.

The teachers spent 15 days last summer attending science seminars at the Laboratory, then used their training to develop lesson plans, science projects and Web site activities for all grade levels. The seminars included lectures and demonstrations on particle physics, charged particles and electromagnetic fields. They also were used as background for advanced sessions on the solar wind and Earth's magnetosphere. The training culminated with descriptions of space science instruments and hands-on experience with analysis of real data from the instruments.

Jane Weesner and Nick Nyjegomir test materials for properties of magnetism as part of a lesson on the magnetosphere. The students are among the first at Mountain Elementary School to study space science in the classroom.
Photos by LeRoy N. Sanchez

Farmington High School physics teacher Debbie Prell is excited that her students will be interpreting real data on the solar wind gathered by the Advanced Composition Explorer spacecraft, currently orbiting the sun with a Laboratory instrument that collects data on energetic particles in the solar system.

"Data interpretation has been neglected in the schools, and what exists is usually canned and lifeless," she said. "Using ACE data gives it a reality that's been missing. Solar wind can do some disruptive things here on Earth — power grids and other equipment fail and communications get scrambled. We're taking something that's usually obscure and demonstrating its long-range effects on people."

Teachers of younger students have designed lesson plans that make space science accessible in different ways. Heather Coy and Sigrid Wurthmann, both teachers at Mountain Elementary School in Los Alamos, have designed a set of lessons on the magnetosphere that include experiments and other hands-on activities to help their students understand some abstract concepts. Myths to Science, in which students study other cultures' explanations for the aurora borealis and also invent their own, is one of those.

Los Alamos Middle School teachers Clara Vigil and Michelle Baker are guiding their team of Mega-Fun architects as they design rides and exhibits demonstrating gravity, satellites and solar wind. They said their students are gaining a research-oriented perspective through their work with space scientists and also benefiting from the software they received courtesy of the LASSO program.

Bill Albee from Naaba Ani Elementary School in Bloomfield is helping his fifth graders build a half-sized model of the Lunar Prospector spacecraft on the school playground, and putting examples of Earth-based instruments in it. The Laboratory designed and built the Lunar Prospector instruments that helped find indications of water on the moon 18 months ago.

Other LASSO teachers are Paul Burton from Tucumcari Middle School, Stephanie Spanier from Mountain Elementary School and Dick Powell from Los Alamos High School.

More information on LASSO projects is available on the World Wide Web at *http://set.lanl.gov/programs/lasso/lassomain.htm*.

Preserving parchment for posterity

by Steve Sandoval

"We the People of the United States, in Order to form a more perfect Union …" Perhaps the most important words from the Constitution of the United States, which along with the Bill of Rights and the Declaration of Independence, is on display at the National Archives in the nation's capital.

Some 1.2 million visitors annually file past the historic documents housed in airtight enclosures to preserve the delicate parchment they were written on more than 200 years ago.

But as this century ends, officials from the National Institute of Standards and Technology have concerns about the enclosures and have embarked on a three-year project to design and build new ones. And the Lab is assisting NIST by providing a scientific assessment of the proposed new encasements.

Last spring, Lance Hill of Engineering Analysis (ESA-EA) analyzed a model of the enclosure that was developed for NIST. He said Dick Rhorer at NIST, a former Laboratory employee, found some deficiencies in the prototype and asked the Lab to provide engineering structural analysis support to aid in the final design of the encasements. Rhorer oversees the mechanical design of the new encasements for NIST.

The current enclosures were built in 1952 and designed to have a 100-year lifespan. However, when conservators at NIST examined them recently, they observed changes that could affect the documents. Hazy areas near where the Bill of Rights made contact with an inner pane of glass revealed possible sites of unwanted chemical reactions. Similar reactions were observed with the Declaration of Independence. They are caused, Hill said, by humidity inside the enclosures, among other things.

Visitors to the National Archives Building in Washington, D.C., view the nation's most important historic documents, including the Declaration of Independence and the Constitution. The Laboratory is helping evaluate new enclosures for the priceless documents. *Photo by Cade Martin, National Archives and Records Administration*

While some humidity is needed to keep the parchment from becoming too brittle, too much humidity has the effect of causing the parchment to swell and contract, which can promote the growth of organisms.

The effect of the environment on the structural integrity of the encasement has been a central theme of Hill's work. He said weather systems can change the barometric pressure, thereby changing the difference between pressure inside and outside the encasements.

"Once the inert atmosphere is all set, we need to make sure we can create and maintain the seal for varying weather conditions," he explained.

Hill also examined the C-seal that will bind the glass panes to the titanium encasements and the 72 bolts that will bind the C-seal to the encasements. He noted in his analysis that "the tightening of the bolt tends to force the frame downward; however, the overall stiffness of the C-seal is such that it tends to serve as pivot point for bending of the frame and glass."

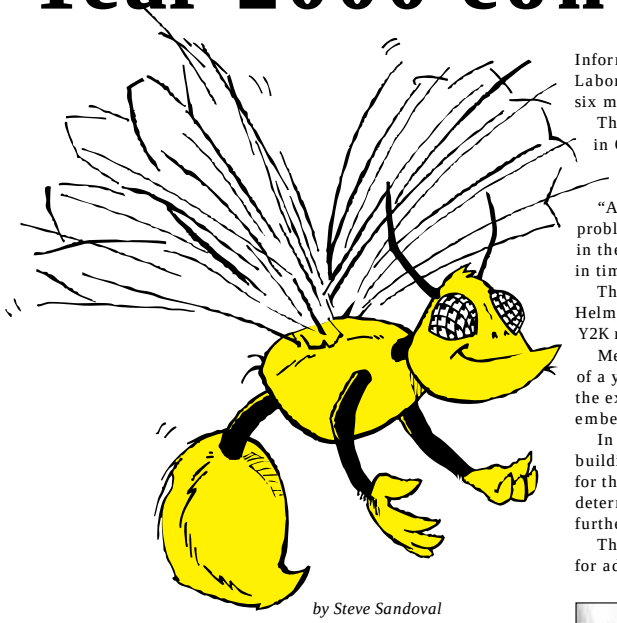
In the current encasements, the parchments are kept flat by two panes of glass. The parchments won't touch glass in the new encasements, he said. "It's an engineering problem, but it's also a cosmetic problem," Hill said. "They want a nice-looking appearance for the documents."

Hill concluded that NIST should use strain-gauge bolts and/or a bolt force sensor to monitor long-term response of the bolts. He also suggested that the frame be stiffened to prevent bending during initial assembly and that NIST perform a drop test because the encasements could be dropped during daily handling.

Hill's group leader, Steve Girrens, said the Lab benefits from partnering with other entities. "For our effort, we get a chance to validate our analysis methodologies in an unclassified environment," he said. "We have the very best engineering analysis talent, particularly in ESA-EA, along with the very best analysis tools and computing power in the world, right here at Los Alamos."

NIST plans to unveil a new prototype encasement next year. The rotunda of the National Archives Building is closing for two years beginning in July 2001. When it reopens in the summer of 2003, new encasements will hold and display all seven pages of the historical documents.

Year-2000 concerns go beyond computer systems



by Steve Sandoval

Bill Mills never realized how many different valve keys are needed to turn off water to some of the 275-plus buildings he and his facility management teammates in Facility Management Unit 66-71 (CST-25) are responsible for across the Laboratory.

At 7,400 feet in late December in Northern New Mexico's Jemez Mountains, knowing where to shut off the water goes beyond the so-called year-2000 computer bug. What with snow and cold, pipes could burst, spewing thousands of gallons of water and damaging buildings and sensitive equipment.

Call it serendipity: Ensuring that his facilities are ready for the computer changeover also led Mills to discover that in some cases as many as eight valve keys are needed to shut off water.

"I thought I could just say to Bill 'go turn off the water to RC-34,' " said Sara Helmick of CST-25. Mills is part of Helmick's dozen Y2K team members.

"If I hadn't looked, I'd have never known," said Mills.

"Our concern is not only computer systems … but what's going to happen if we lose power and it's cold and snowy," said Helmick. "We're going to have to protect our buildings."

The year-2000 changeover isn't just a computer problem. But most of the attention has been on computers, both desktops and "servers" that run entire networks, house software programs and data and keep buildings cool in the summer and warm in the winter.

"We didn't think there was a facility problem at the Lab when we started," said Diane Weir of the Computing, Information and Communications (CIC) Division and the Laboratory's Year 2000 Project Team leader. "We found this out six months into this."

The Laboratory launched its year-2000 World Wide Web site in October 1997. "A lot of companies didn't have a year-2000 Web site in 1997 … I think the Web really made a difference in broadcasting what you had to do," said Weir.

"A lot of industrial America didn't wake up to the year-2000 problem until 1997 or '98," Weir continued. "We were kind of in the mainstream; we weren't the leaders. But we did wake up in time to fix the most important problems."

There are 16 facility management support teams, like Helmick's, that are responsible for making Lab facilities Y2K ready.

Mel Burnett of Facilities Engineering (FWO-FE) was part of a year 2000 facilities planning team tasked with determining the extent of the problem the Laboratory might face with embedded systems.

In August 1998, the team looked at 21 office and research buildings across the Lab. "Originally, we didn't have a good feel for the size of what the problem was," said Burnett. The review determined that "we had a problem and felt we needed to look further into the 2,500 buildings we have at the Lab."

The team asked Deputy Director for Operations Dick Burick for additional funding to survey another 200 buildings. Jack Auflick of the Technology and Safety Assessment (TSA) Division developed a statistical model to prioritize the buildings as "low," "medium" and "high." A private company the Lab hired determined that some of the high priority buildings were PF-4 at Technical Area 55; the Chemistry and Metallurgy Research Building; the sanitary sewage treatment facility; the Administration Building at TA-3; and the Emergency Operations Center at TA-59.

"The idea was to go in and say 'now what really controls this guy,' " said Burnett. "If you know what makes the building tick … then you have reasonable assurance that you've found all the important embedded systems," he said.

An embedded system is essentially a computer chip or computer system that controls or monitors a building system.

Burnett said he worried whether the Lab discovered its Y2K problem on time. Raytheon Corp. did a year-2000 "college" in 1998 for Los Alamos, he noted, and suggested the Lab and others should have been looking at its embedded systems since 1996.

Marty Ott of Nuclear and Radiochemistry (CST-11) uses a pair of manipulators to handle an object in a dispensary cell at the Technical Area 48 Hot Cell facility. Facility managers are concerned that a disruption of electrical power will irreversibly damage the windows because the oil in the windows will coagulate; the interior of the facility must be maintained at a constant temperature above 40 degrees F to avoid this problem. *Photo by John Bass*

"It caused me a lot of consternation … my original concept was to go out and find everything. I had to scale back my expectations … the scope of my thinking," he said.

Burnett said the consultant looked at 1,227 facility systems in the medium and high priority buildings. The systems controlled everything from heating and ventilation systems to uninterruptible power systems. Burnett said the consultant didn't look at badge readers and other access control devices, which were looked at when the Lab was determining whether its mission-essential systems were ready for Jan. 1, 2000.

The consultant found 431 embedded systems in the 1,200-plus facility systems; 274 were year 2000 ready. Thirty-seven weren't year-2000 ready and the team found insufficient information to make a determination for the remaining 120 embedded systems.

One of the noncompliant embedded systems that controls a heating and ventilation system in a chemistry lab at TA-48 was fixed by downloading new software into a computer, Burnett explained.

At TA-50, an automated system for a radiological process was noncompliant. It will be replaced next year, but in the interim, Burnett said the Y2K fix was to roll back its calendar 10 years. The system now thinks it's 1989, averting a potential problem come Jan. 1, 2000.

Affixed on a cabinet door where the system is housed is a 6-inch-by-12-inch label — "The calendar in this control system is set back 10 years to resolve Y2K noncompliance" — explaining the temporary fix, Burnett added.

"That's an easy way to take care of these things, but you're setting yourself a time bomb," said Burnett. It's important, he said, to document the quick fixes so they can be fixed permanently later.

Back at TA-48, it's approaching midnight on Dec. 31. Loaded on the back of pickup truck is a 5-kilowatt portable generator; it's mobile to be able to quickly move from site to site to provide emergency power if there's an outage. Mills, a facility coordinator for Johnson Controls Northern New Mexico assigned to Helmick's team, bought seven generators that can be pressed into action at any of the CST-25 facilities.

Their team also has eight other generators tucked away in buildings, just in case, said Mills.

At the Laboratory, loss of electrical power to buildings and equipment that are temperature sensitive, such as refrigerators and freezers, glove boxes, could affect scientific research not to mention the potential structural damage.

The hot cell windows at RC-1, one of CST-25's buildings, where medical radioisotopes are made, have to have power, said Terry Vergamini of Health Physics Operations (ESH-1). If the interior of the facility doesn't maintain a constant temperature, seals around the windows will shrink. "If that would happen it would be a mess," he said.

"It's critical we keep those buildings from being destroyed," added Helmick. "If we lose power, we got problems."

Helmick's facility team and others like it around the Lab will be playing out a similar scenario come Dec. 31. But they aren't working in a vacuum, she said. Facilities personnel will be working on New Year's Eve Labwide and in constant communication with the Emergency Operations Center, which will be staffed beginning about 9 p.m. that night.

"My philosophy looking at this is that prudent preparations are appropriate whether it is year 2000 or not," said Burnett. "The preparations we're making are a good idea … we could lose power lines or transformers independent of Y2K.

"If you look at natural occurrences, they're probably just as likely as a problem caused by year 2000," he continued. "I think we've used that same philosophy in this. We've done what is prudent using a risk-based approach without going overboard."

people

Musgrave awarded Exemplary Civilian Service Award

Kent Musgrave

Laboratory employee **Kent Musgrave** of Military Application (NW-SS) has been honored for outstanding service as senior technical adviser on nuclear matters for the Air Force Directorate of Nuclear and Counter Proliferation. Musgrave was awarded an Exemplary Civilian Service Award upon conclusion of his change of station assignment at the Pentagon in Washington, D.C.

Musgrave received a bachelor of science degree in engineering science from Colorado State University. He has 22 years of nuclear weapons experience and expertise in nuclear weapons development, system design, production and analysis.

He also has extensive experience in program management, which includes efforts critical to the mission of the Laboratory.

Trewhella elected AAAS Fellow

Jill Trewhella

Jill Trewhella, acting Biosciences (B) Division director, has been elected a Fellow of the American Association for the Advancement of Science.

AAAS is a nonprofit professional society dedicated to the advancement of scientific and technological excellence in all disciplines and to the public's understanding of science and technology. AAAS membership comprises more than 143,000 scientists, engineers, science educators, policymakers and other professionals worldwide. As a Fellow, Trewhella joins an elite group of about 10,000 of the nation's leading researchers.

Trewhella was elected a Fellow by the AAAS Council for her "fundamental structural studies of intracellular signaling and enzyme activation via second messengers, and for the development of neutron scattering applications in structural molecular biology."

Trewhella will be honored in February in Washington, D.C., during AAAS' Fellows Forum, part of the organization's annual meeting.

"I am truly grateful to the AAAS for bestowing this tremendous honor upon me," said Trewhella. "I'm overwhelmed by this recognition, and I share this award with those at the Lab and elsewhere who have supported my research throughout my scientific career."

Trewhella received her bachelor's degree in mathematics and physics and her master's degree in physics from the University of New South Wales (Australia). She received her doctorate in inorganic chemistry from the University of Sydney.

She has held several supervisory roles during her 15 years at the Lab, including structural biology section leader, deputy group leader and group leader.

Trewhella also has won several awards and honors throughout her scientific career, including several from the Lab. She was elected a Laboratory Fellow — the Lab's highest scientific distinction — in recognition of her outstanding scientific contributions (1995).

continued on Page 10

Rey receives DOE Hispanic Heritage Award

Virginia Rey of Radiation Protection Services (ESH-12) recently received a Hispanic Heritage Award from the Department of Energy.

Rey, an 18-year employee of the Laboratory, was honored in the contractor staff category. The award ceremony in Washington, D.C., coincided with the department's kickoff of national Hispanic Heritage Month — Sept. 15 through Oct. 15.

"I am deeply honored by this award and am extremely proud of my Hispanic heritage," Rey said. "I recognize the importance of teamwork and diversity. Therefore, I share this award with both Hispanic and non-Hispanic individuals who have supported and encouraged me throughout my career.

"I emphasize to our youth the importance of obtaining an education. I firmly believe in setting your goals and persevering. 'Si se puede [it can be done].' "

Rey has a bachelor's degree in education from West Texas State University and a master's degree in nuclear engineering from University of New Mexico. Before joining the Laboratory, she taught mathematics at a junior high school in Amarillo, Texas, and at Los Alamos High School.

Rey joined the Laboratory in 1981 as a health protection technician and radiological control technician. She also has been a lead radiological control technician, an alternate supervisor, indoctrinator and trainer at the Lab.

In her current position, Rey provides support to ESH-12's Radiological Engineering Team. Among other things, Rey reviews appropriate documents of facilities and functions using radioactive material and radiation producing devices for radiological concerns.

In addition, Rey is the student adviser for the Environment, Safety and Health (ESH) Division and oversees a program that provides a variety of experiences for students who work in ESH during the summer.

Rey is a member of the National Health Physics Society, Rio Grande Chapter of Health Physics Society, American Nuclear Society and Mexican American Engineers and Scientists.

October/November service anniversaries

October

45 years
Myron Stein, TSA-5

35 years
Charles Reese, DX-3
Joe Sanchez, ESH-13
Joseph Valdez, LS-4

30 years
L. Scott Cram, LS-DO
Brad Holian, T-12
Morris Klein, NIS-IT
Humberto Martinez, ESA-WMM
Michael Pierotti, BUS-5
Gary Simonsic, ESA-WE

25 years
Thomas Booth, X-CI
Paul Chapman, ESA-WMM
Martin Cooper, P-25
Rickey Eavenson, BUS-4
Ronald Ellis, MST-8
George Jennings, DX-7
Dennis Liles, TSA-10
Mark Roschke, CIC-7
Gilbert Sanchez, ESA-WMM
J.T. Sena, ESA-EPE
Carol Trask, HR-5
Michel Tuszewski, NIS-2
Walter, Wenzel, ESH-1
George York, DX-3

20 years
Terrence Bott, TSA-11
Sharon Brock, BUS-8
Sandra Clute, ESH-OIO
K.B. Lautenschlager, TSA-5
Victoria Longmire, NMT-4
Elaine Martinez, BUS-1
Julianne Meyne, LS-4
Barham Smith, NIS-2
Robert Tafoya, BUS-4
Judith Tesmer, LS-3
Denise Vasilik, ESA-WE
Bernhard Wilde, X-TA

15 years
David Barlow, LANSCE-1
Douglas Barney, ESH-5
Ralph Berggren, P-24
Jeffrey Bingham, P-FM
J. Yates Coulter, MST-STC
Brenda Edeskuty, ESH-IEP
Michelle Ferran, NMT-8
Doris Garvey, ESH-EIS
Judith Goldie, PA
Robert Grace, ESA-FM-ESH
James Griffin, AA-2
Elmer Gurule, ESA-MT
Steve Howard, CIC-4
Jon Hurd, NMT-4
Mark Jones, S-7
Todd Kauppila, DX-3
Patrick Majerus, NIS-3
Egan McCormick, NMT-7
Lisa McCurdy, CST-11
Janet Neff-Shampine, ALDNW
Joyce Riebe, HR-5
Douglas Roberts, TSA-SA
Gale Slentz, CIC-5
Noble Snodgrass, ESA-DE
Phillip Stroud, TSA-3
Lynda Towers, ESA-FM-ESH
Larry Ussery, NIS-6
Eric Vigil, CIC-1
Vincent Yuan, P-23
Rosa Zarate, ESH-13

10 years
Robert Bennett, CIC-7
Randall Bos, X-HM
Robert Carlson, S-1
John Carson, NIS-8
Scott Demuth, TSA-4
David Dennison, ESA-EPE
Paul Dixon, E-YMP
Sylvia Ellington, S-8
William Fite, GR
Philip Fresquez, ESH-20
Carlos Garcia, E-ST
Jeanne Gomez, BUS-4
Edwin Goodwin, LS-4
Christine Hedquist, HR-5
Joe Hoisington Jr., ESA-FM-ESH
Sarah Hoover, ESH-1
Kym Kittell, CIC-1
D. Burgess Laird, ALDTR
Vickie Maestas, P-21
John Martinez, ESA-MT
Mark Mullen, NIS-RNP
Frederick Oblad, DX-7
Richard O'Leary, MST-6
Kathleen Padgett, S-5
Min Sung Park, LS-8
Ann Pendergrass, ESH-3
Donna Naranjo, CIC-2
William Nystrom, X-CI
Sarah Salazar, ESH-20
Sara Scott, NIS-NAC
Dolores Sherlock, ESH-DO
Page Stoutland, NIS-RD
Leonard Tabaka, P-22
Margaret Tapia, HR-5
Rosemary Thompson, HR-POLICY
Audrey Ulibarri, NIS-1
John Vorthman, DX-1
John Watkin, CST-18
Debra Wersonick, OEO
Laura Worl, NMT-11

5 years
Kenneth Adams, X-CI
Walter Atchison, X-PA
Leo Baca, ESA-MT
Katherine Brittin, AA
Paul Burgardt, MST-6
Rita Chavez, HR-5
Louise Desgeorges, ESA-MT
Arvel Dye, ESH-19
Cynthia Eden, LS-DO
Parks Fields, CIC-5
Alp Findikoglu, MST-STC
Mark Fisher, DX-1
Brenda Fresquez, AA-3
Nicole Gaedecke, CIC-6
Jerome Garcia, IBD
David Gurd, LANSCE-8
S.Y. Helfinstine, MST-11
Edward Kachenko Jr., MST-6
R.D. Little, P-24
Joseph Lopez, DX-4
Edward MacKerrow, X-CM
Achla Marathe, CIC-3
Douglas Marbourg, PM-4
Brad Meyer, ESA-WE
Timothy Milligan, S-4
Maryrose Montalvo, NMT-1
Gerald Morris Jr., NIS-5
Teresa Morris, CIC-7
Belinda Padilla, IBD
Michael Prime, ESA-EA
Stephen Ruggles, LANSCE-5
Patricia Smith, DLDSTP
George Vigil, E-ET

November

35 years
Aaron Martinez, CST-12
Ramona Roybal, BUS-8

25 years
E Archuleta, BUS-7
Michael Baker, DLDOPS
Joseph Graf, ESH-RPO
Richard Hildner, ESA-WE
Adrian Lovell II, NMT-1
Joseph Mack, P-DO
Leo Riedel, NMT-11
Leonard Romero, ESH-4
Mary Roybal, NMT-3
Maybelle Vigil, ESA-DE
Rachael Vigil, TSA-1
Donna Williams, TSA-4

20 years
Rebbecca Baca, ESA-FM-ESH
Marti Browne, HR-7
Dominic Cagliostro, X-CM

continued on Page 10

In Memoriam

Ron Lujan
Laboratory employee Ron Lujan died Sept. 13. He was 40. He came to work for the Lab in 1981 and served as a draftsperson, level II in the former Explosive Technology group (WX-12). He provided design/drafting support and helped the team function coherently. He followed jobs through fabric, inspection and installation as required, developing useful relationships with associates and customers alike. Lujan was currently working for Experiment and Diagnostic Design (DX-5).

Russell B. Kidman
Laboratory employee Russell B. Kidman died Sept. 17. He was 58. Kidman received his master's degree in physics at South Dakota State University in 1964. Kidman served in the U.S. Army from 1964 to 1966, assigned to the nuclear power field office as chief of the academic training section. He came to work for the Lab in 1974 with the former Thermonuclear Weapons Design (T-2). Kidman was currently working with Nuclear Systems Design and Analysis (TSA-10).

Louis Goldstein
Laboratory retiree Louis Goldstein died Aug. 26. He was 95 years old. Goldstein received a doctorate from the University of Paris, France, in 1932. He came to the Lab in 1946 as a senior scientist in the Theoretical (T) Division and published numerous scientific papers. Goldstein belonged to several organizations including the American Physical Society, New York Academy of Sciences and the American Association for the Advancement of Science. Goldstein retired from the Lab with the former Fundamental Nuclear Physics (T-10) group in 1971. He continued working with the Lab as a consultant for several years.

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Silver new MST-11 group leader

Richard Silver

Richard Silver is the new group leader of Electronic and Electrochemical Materials and Devices (MST-11).

Silver joined the Laboratory in 1974 and was a staff member in the Theoretical (T) Division for 18 years. For more than seven years, Silver served as leader of the Neutron Scattering Group (P-8) at the Weapons Neutron Research/Proton Storage Ring facility, now the Los Alamos Neutron Science Center at Technical Area 53.

Silver received a bachelor's degree in physics in 1966 and a doctoral degree in theoretical physics in 1971, both from the California Institute of Technology. He has published more than 100 scientific papers in elementary particle physics, semiconductor physics, neutron scattering, quantum Monte Carlo, methods for electronic structure calculations, materials behavior under high strain rate conditions and statistical methods for data analysis.

Silver was chairman of the Laboratory's Postdoctoral Committee and served on numerous facility advisory committees and as organizer for several international conferences.

"MST-11 has excellent people and excellent basic science. It also has the strongest external interactions with industry and with the Department of Defense," said Silver. "I am delighted with this combination of basic and applied science, and I am enthusiastic about the opportunity to join this team and to contribute to their work in such areas as organic electronics, sensors, fuel cells and acoustic interferometry."

Roybal elected president of the New Mexico Municipal League

Chris Roybal

Laboratory employee **Chris Roybal** has been elected president of the New Mexico Municipal League.

Roybal is a communications security specialist in Computer and Technical Security (S-5). He was elected to the post at the New Mexico Municipal League's 42nd annual conference in Albuquerque. He assumed the president's post on Oct. 1 and will serve a one-year term.

The New Mexico Municipal League is a not-for-profit, nonpartisan organization that represents 102 incorporated municipalities in New Mexico. Its offices are in Santa Fe.

"Laboratory management has always supported me in my political endeavors, and now I have the opportunity to help the Laboratory and its employees in matters that may impact us via state legislation or local/municipal ordinances," Roybal said.

Roybal was elected to the Española City Council in 1990 and currently serves as Mayor Pro Tempore. He also is chairman of the city's Public Safety Committee and chairman of the Rio Arriba County/city of Española E911 Authority.

He previously has been a board member, treasurer and vice-president of the New Mexico Municipal League. He has worked at the Laboratory 20 years.

Service anniversaries ...

continued from Page 9

Janis Gallegos, S-7
Darryl Gutierrez, NMT-8
Sue Harper, CIC-1
Carol Knoell, ESH-7
Luis Lopez, LANSCE-5
Harry Otway, DIR
Otis Peterson, CST-1
David Romero, NMT-15
Isaac Sandoval, NMT-13
Tai-Sen Wang, LANSCE-1
Edwina Wood, BUS-DO
Andrew White Jr., DELPHI

15 years
Blaine Asay, DX-2
Angela Baca, NMT-5
Richard Beavers, CIC-2
Ernest Buenafe, CIC-7
Lowell Christensen, NMT-15
Peter Delmar, NMT-11
Paula Dransfield, S-6
Valerie Espinoza, NW-IFC
John Fawcett, LS-3
John Gilpatrick, LANSCE-1
Margaret Gosling, ESH-2
Dennis Herrera, DX-4
Valerie Herrera, PM-1
Everett Jenkins, ESA-TSE
Brett Kniss, NW-PMPO
Roger Kruse, ESH-7
Ronald Madrid, NIS-8
Jane Martinez, HR-6
Joseph Martinez, ESA-WE
Glenda McGrath, ESH-12
Donald McMurry, MST-11
Glenn Michel, CIC-5
Mary Miller, BUS-5
Troy Moore, NIS-3
Dinh Nguyen, LANSCE-9
Barbara Pacheco, HR-5
Jasmine Pan, CIC-13
Karl Pommer II, CIC-4
Jorge Roman, CIC-15
Dale Talbott, ESA-WE
Robert Vocke, E-DIV
Kimberly Zeilik, BUS-5

10 years
John Bingert, MST-6
Jeffrey Brown, CIC-8
Teh-Chin Cheng, X-HM
Ronnie Cohen, HR-6
Luc Daemen, LANSCE-12
Jerry Delapp, CIC-5
Sharon Gonzales, FWO-RLW
Mary Herrera, LC
Rosalie Ott, CIC-1
Octavio Ramos Jr., CIC-1
Scott Salisbury, ESH-5
David Seidel, ESH-3
Christine Serrano, NMT-15
Denise Tellier, ESH-14
Jimmy Womack, S-5

5 years
Stephen Abeln, MST-6
Jonathan Atencio, NMT-8
Roscoe Barnes, ESA-FM
Galey Bland, ESH-1
Denise Borrego, PM-4
Thomas Brake, EES-7
Laura Briesmeister, ESH-10
Jamie Brophy, ESA-MT
Edward Dendy, MST-8
John Dinsmoor, EES-7
John Elliott, ESH-1
Michael Fanning, ESH-1
James Gattiker, NIS-7
Eric Gerdes, NIT-7
Joaquin Gutierrez, MST-OPS
Carl Hagelberg, EES-5
George Hammon, ESA-MT
Marsha Hunt, ESH-13
Daniel Jones, PM-4
Mark McMillen, LANSCE-6
William Myers, NIS-6
Carlos Padilla, ESH-13
Brent Park, NIS-6
Eugene Pokorny, EES-7
Dominic Pompeo, ESH-1
Richard Rasmussen, ESH-1
Reid Rivenburgh, CIC-3
Steven Sandoval, PA
Charles Soderberg, BUS-3
William Thissell, MST-8
Darlene Valdez, ESH-4
Melissa Velarde, HR-5
Andrew Wolfsberg, EES-5

Syndicated material.

Removed at the request of the syndicate

This month in history

December

1901 — The first Nobel Prizes are awarded

1913 — The first modern cross-word puzzle is printed in the New York World newspaper

1943 — KRS, a "closed circuit" radio station in Los Alamos, officially begins broadcasting

1953 — President Eisenhower delivers his "Atoms for Peace" speech at the United Nations

1967 — Project Gasbuggy in Rio Arriba County is the first underground nuclear experiment aimed at stimulating low-productivity gas resources

1998 — The U.S. House of Representatives impeaches President Clinton

January

1790 — President Washington delivers the first "State of the Union" speech

1822 — New Mexico signs an oath of allegiance to newly independent Mexico

1944 — Edward Teller begins teaching a course in advanced physics at the high school in Los Alamos

1952 — The Los Alamos Medical Center is dedicated

1973 — NASA announces the start of the space shuttle program

1995 — Ten Russian nuclear materials experts are the first from their country to visit the plutonium facility at TA-55

spotlight

Red Fish Blue Fish achieves its wish

by Steve Sandoval

The title of "world champion" is lofty and signifies a level of achievement and consistency surpassed by few.

The New York Yankees have won 24 World Series titles. The Pittsburgh Steelers have four Super Bowl championships. The Boston Celtics have 16 NBA titles. Chris Fontes of Diagnostic Applications (X-5) also claims the title of world champion. He was on the United States team that won the Ultimate Frisbee World Championship in August in St. Andrews, Scotland.

His team, Red Fish Blue Fish — Dr. Seuss fans will relate to the name — beat Osaka Natto, a Japanese team, 14-12, in the coed category final, beating out 15 other teams. Red Fish Blue Fish had to win 11 games to win the world championship.

This year, Red Fish Blue Fish won the U.S. Northwest Regionals to qualify for the national ultimate frisbee competition in San Diego in late October. However, the team lost a close game in the finals to Raleigh Lamas from North Carolina, so it won't return to the international championships.

Red Fish Blue Fish qualified for the world championship competition last year by winning the Ultimate Players Association Frisbee Coed National championship in October 1998 in Sarasota, Fla. They had to win eight games in four days in this tournament, Fontes said.

"Playing in the world championships was beyond anything I'd ever dreamed about," Fontes said. "It was extremely exciting."

At Los Alamos, Fontes is a theoretical physicist; he develops atomic data for nonweapons and weapons codes. Outside the office, Fontes has played ultimate frisbee for 12 years.

"I grew up on the ocean," the Fall River, Mass., native said. "I always loved to throw the frisbee, but I only threw the backhand," he said, referring to the most common method of throwing the disc so it rotates in a clockwise motion.

It's hard to pin down ultimate frisbee or compare it to other competitive sports. The game isn't timed; but tournaments place time caps to keep on schedule. Games are usually played to 15, like volleyball matches, but typically it takes anywhere from 13 to 21 points to win, said Fontes.

Although spectators may see some similarities to football, physical contact is not allowed, and the play is free flowing like soccer. And the game is played on a smaller field: 70 yards long by 40 yards wide. The goal in ultimate frisbee is to catch the whirling disc in your end zone to score one point.

Each team consists of seven players on the field at any time although teams usually have between 15 and 20 players. In coed ultimate frisbee the receiving team dictates how many women and men can be on the field at the beginning of each point.

"It's a pretty easy game to understand," said Fontes, noting that at the start of a game, two frisbees are flipped; "same" or "different" are called and whoever makes the correct call gets to decide who makes the first throw, or "pull" and which end zone to defend.

Chris Fontes, right, of Diagnostic Applications (X-5) is airborne as he catches a throw during one of Red Fish Blue Fish's games in the Ultimate Players Association Frisbee Coed National tournament last year in Sarasota, Fla. *Photo courtesy of Fontes*

While offenses differ greatly in complexity, the basic structure has three handlers, akin to a quarterback in football, two middle and two "long" or "deep" players. Middle players catch middle distance passes of 20 to 30 yards. The long or deep players play further up the field, Fontes explained. One big difference from soccer or football: players can't run with the frisbee.

"At its most beautiful [ultimate frisbee] is a very flowing thing," said Fontes.

Fontes played a major role in the finale, throwing two goals, including the game winner, and catching three scores. "In this game I played extremely well. Sometimes it's your day," he said.

Fontes said going into the finale Red Fish Blue Fish felt confident about its chances. The opponents were faster but shorter — a height advantage is important in ultimate frisbee for catching throws.

Late in the game, the United States trailed 11-10, and rain had been falling intermittently, making it harder to grip the frisbee and making footing difficult, Fontes recalled.

On the winning score Fontes threw a high release backhand. "For just a fraction of a second, the emotion flowing through my body was indescribable," he said. "My whole team played great … There were ebbs and flows.

In contrast to much athletic competition where winning is the only thing that matters to some, Fontes said ultimate frisbee has steadily attracted players enticed by the "spirit of the game."

"The major reason people are playing coed [ultimate frisbee] is the game is more fun," he said. "It's more spirited."

Reflections
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